at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v6)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{12}$ $\sqrt{27}$ $\sqrt{45}$

$\sqrt{2 \cdot 2 \cdot 3}$ $\sqrt{3 \cdot 3 \cdot 3}$ $\sqrt{3 \cdot 3 \cdot 5}$

$2\sqrt{3}$ $3\sqrt{3}$ $3\sqrt{5}$

Question 2

Find all solutions to the equation below:

$$2\left((x+10)^2 - 5\right) = 88$$

First, divide both sides by 2.

$$(x+10)^2 - 5 = 44$$

Then, add 5 to both sides.

$$(x+10)^2 = 49$$

Undo the squaring. Remember the plus-minus symbol.

$$x + 10 = \pm 7$$

Subtract 10 from both sides.

$$x = -10 \pm 7$$

So the two solutions are $x = -3$ and $x = -17$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 + 6x = 72$$

Take the linear coefficient, 6, halve it and square the result. You should get 9. Add this to both sides of the equation to complete the square.

$$x^2 + 6x + 9 = 72 + 9$$

$$x^2 + 6x + 9 = 81$$

Factor the perfect-square trinomial.

$$(x + 3)^2 = 81$$

$$x + 3 = \pm 9$$

$$x = -3 \pm 9$$

$$x = 6 \quad \text{or} \quad x = -12$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 2x^2 + 20x + 54$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 2 .

$$y = 2(x^2 + 10x) + 54$$

We want a perfect square. Halve 10 and square the result to get 25 . Add and subtract that value inside the parentheses.

$$y = 2(x^2 + 10x + 25 - 25) + 54$$

Factor the perfect-square trinomial.

$$y = 2((x + 5)^2 - 25) + 54$$

Distribute the 2.

$$y = 2(x + 5)^2 - 50 + 54$$

Combine the constants to get **vertex form**:

$$y = 2(x + 5)^2 + 4$$

The vertex is at point $(-5, 4)$.